



Western Digital Technologies, Inc.
Serial Number: 09/676,405

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Patent
Docket: K35A0458

#118
MDJ
10.8.03

In re Application of:
Butler
Serial No.: 09/676,405
Filed: 09/29/00
Title: A DISK DRIVE COMPRISING A COVER
SHAPED TO IMPROVE RADIAL AND
AXIAL SHROUDING

Group Art Unit: 2653
Examiner: Castro, A. A.

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BRIEF ON APPEAL

THE ASSISTANT COMMISSIONER FOR PATENTS
ALEXANDRIA, VA 22313

Sir,

The following appeal brief is submitted pursuant to the Notice of Appeal filed on
9/02/03, in the above-identified application.

REAL PARTY IN INTEREST

The real party in interest for the above-identified patent application is Western Digital Technologies, Inc. (see assignment REEL/FRAME: 011188/0086 identifying Western Digital Technologies, Inc. as assignee of the entire right, title and interest of the above-identified patent application).

RELATED APPEALS AND INTERFERENCES

There are no known appeals or interferences related to the instant appeal.

STATUS OF CLAIMS

Claims 1 through 4 are the only claims pending and stand under final rejection. Claims 1-3 are the basis of this appeal.

STATUS OF AMENDMENTS

In response to the final office action, the applicant filed a response canceling claim 4. The response after final has not yet been considered by the examiner.

SUMMARY OF INVENTION

As illustrated in FIG. 2, the present invention may be regarded as a disk drive 120 comprising a disk 122, a spindle motor for rotating the disk 122, an actuator arm 126, a head 124 coupled to a distal end of the actuator arm 126, a rotary actuator for rotating the actuator arm 126 about a pivot to actuate the head 124 radially over the disk 122, a base 128, and a cover 130 attached to the base 128 to form a head disk assembly (HDA) chamber. The cover 130 comprises an inner surface 132 (see FIG. 3A) and an outer surface 134. As shown in FIG. 3A, the cover 130 further comprises a shroud 136 extending axially from the inner surface 132 into the HDA chamber substantially enveloping the periphery of the disk 122, including at least part of the outer periphery coextensive with the actuator arm 126 when the actuator arm 126 is positioned adjacent to the outer periphery of the disk 122, to provide radial shrouding of the disk 122.

ISSUES

- I. Whether claims 1-3 are patentable under 35 U.S.C. §103(a) over Huang et al. (5,631,787).

GROUPING OF CLAIMS

Claims 1-3 stand rejected and are grouped together for the purpose of this appeal.

THE REFERENCES

The following references are relied upon by the examiner:

Huang et. al. 5,631,787 May 20th, 1997

THE REJECTIONS

Claims 1-3 stand rejected under 35 USC §103(a) as unpatentable over Huang et al.. The examiner asserts that Huang discloses a disk drive having a shroud that extends axially from the inner surface of the base into the head disk assembly chamber substantially enveloping the outer periphery of the disk, including at least part of the outer periphery coextensive with the actuator arm when the actuator arm is positioned adjacent to the outer periphery of the disk, to provide radial shrouding of the disk. The examiner concedes that Huang does not disclose that the shroud is part of the cover for the disk drive, but asserts that locating the shroud on the cover would be obvious to one skilled in the art since it involves routine rearranging parts of an invention. Further, the examiner asserts that one skilled in the art would have been inherently motivated to modify the disk drive disclosed by Huang by locating the shroud on the cover to reduce manufacturing time.

ARGUMENT

I. THE ISSUE UNDER 35 U.S.C. §103(a) - HUANG

- A. The rejection should be reversed because Huang does not disclose or suggest to incorporate a radial shroud with the cover of a disk drive, and doing so involves more than just routine rearranging parts of an invention.

The examiner is incorrect in asserting that incorporating a shroud into a cover of a disk drive involves routine rearranging parts of an invention (i.e., rearranging the shroud disclosed by Huang so that it becomes part of the cover). Incorporating a radial shroud into the cover of a disk drive provides the significant benefit of decreasing the manufacturing time. Nothing in Huang suggests a motivation for incorporating the radial shroud into the cover, and one skilled in the art would not be motivated inherently to make this modification in order to reduce the manufacturing time. The motivation of reducing manufacturing time comes only from applicant's disclosure which cannot be used under 35 USC §103. The examiner is employing improper hindsight relying on a motivation taught only by applicant's disclosure rather than a motivation taught by the prior art. The mere fact that the prior art may be modified in the manner suggested by the examiner does not make the modification obvious unless the prior art suggested the desirability of the modification. (In re Fritch 972 F.2d 1260; 23 U.S.P.Q.2D (BNA) 1780 (1992))

Turning now to the Huang disclosure, at col. 6, line 65 to line 7, line 3, Huang suggests that "the shroud elements 120 and 122 could be fashioned during casting of the base and sidewalls as extensions of the sidewalls. Thus, the shroud elements would be formed of cast aluminum as an integral portion of the disk drive base." However, this embodiment would render it extremely difficult to manufacture the disk drive since the actuator arms 112 and disks 6 would have to be installed into the disk drive as a unitary assembly. Referring to applicant's disclosure at page 2, lines 19-22, the preferred method for manufacturing a disk drive is to first install the disk 108 (FIG. 1), and then install the actuator arm assembly so that the actuator arms

110 fit into the gap 118 without damaging the heads 114. The actuator arms 110 are then rotated to position the heads 114 over the disks 108. If the shroud 122 disclosed in FIG. 1 of Huang was integrally formed with the base 104, it would prevent installing the actuator arms 112 as a separate assembly since the shroud 122 would obstruct the actuator arms 112 from rotating into position over the disks 106 (FIG. 1 of Huang). This is why Huang discloses the shroud 122 as a separate element which is installed after rotating the actuator arms 112 into position over the disks 106. However, installing the shroud 122 as a separate element increase the cost and complexity of manufacturing the disk drive.

The applicant's disclosure overcomes the drawbacks associated with installing a separate shroud element while still allowing the actuator arms to be installed as a separate assembly. Referring for example to the disk drive disclosed in FIG. 2 of applicant's disclosure, the radial shrouding provided by the base 128 does not extend into the gap 138 so that when installing the actuator arm assembly the actuator arms 126 are inserted into gap 138 and then rotated to position the heads 124 over the disks 122. The cover 130 (and its shroud element 136 of FIG. 3A) is then fastened to the disk drive 120 during a single manufacturing step, wherein the shroud 136 fits into gap 138 of FIG. 2 to provide additional radial shrouding. This avoids the cost and complexity of installing a separate shroud element as disclosed by Huang. Further, this allows the actuator arms 126 to be installed as a separate assembly after installing the disks 122 since the shroud 136 is not formed as an integral part of the base 128 as suggested by Huang, and therefore the shroud 136 does not obstruct the rotation of the actuator arms 126 after being inserted into gap 138 (FIG. 2).

Applicant's invention extends the desirable effects of radial shrouding while achieving significant benefits to the manufacturing process overcoming the drawbacks associated with Huang's disclosure. Huang does not disclose any motivation for combining the shroud with the cover, and the motivation of reducing manufacturing time as suggested by the examiner comes

only from applicant's own disclosure which cannot be used under 35 USC §103. The examiner has not cited any prior art reference which discloses a motivation for incorporating a radial shroud into a cover of a disk drive, and therefore the examiner is employing improper hindsight reasoning by relying on a motivation that is disclosed only by the applicant's disclosure (reducing manufacturing time).

The examiner argues that "any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning." However, any reconstruction through "hindsight reasoning" must be supported by a motivation disclosed in the prior art. The standard of law supporting a rejection under 35 USC §103 is clear: "Our case law makes clear that the best defense against the subtle but powerful attraction of a hindsight-based obviousness analysis is rigorous application of the requirement for a showing of the teaching or motivation to combine prior art references." (In re Dembiczak, 175 F.3d 994, 50 USPQ2d 1614, (Fed. Cir. 1999)). "The mere fact that the prior art may be modified in the manner suggested by the examiner does not make the modification obvious unless the prior art suggested the desirability of the modification." (In re Fritch 972 F.2d 1260; 23 U.S.P.Q.2D (BNA) 1780 (1992)). The desirability of reducing manufacturing time relied upon by the examiner is disclosed only by applicant's disclosure and not by any other prior art reference. The rejection under 35 USC §103 is therefore improper and should be reversed.

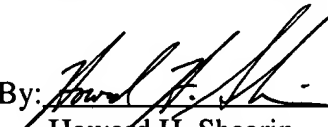
CONCLUSION

Reversal of the rejections in this appeal is respectfully requested.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account No. 23-1209, and please credit any excess fees to such deposit account.

Respectfully submitted,

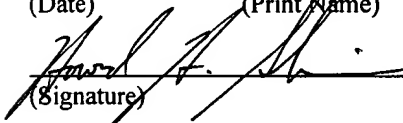
Date: 9/17/03

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CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Commissioner of Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on:

9/17/03 Howard H. Sheerin
(Date) (Print Name)


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APPENDIX

A complete listing of the claims on appeal:

- 1 1. A disk drive with improved shrouding, comprising:
 - 2 (a) a disk;
 - 3 (b) a spindle motor for rotating the disk;
 - 4 (c) an actuator arm;
 - 5 (d) a head coupled to a distal end of the actuator arm;
 - 6 (e) a rotary actuator for rotating the actuator arm about a pivot to actuate the head
 - 7 radially over the disk;
 - 8 (f) a base; and
 - 9 (g) a cover attached to the base to form a head disk assembly chamber, wherein the disk,
 - 10 head, actuator arm, and rotary actuator are enclosed within the head disk assembly
 - 11 chamber, the cover comprising:
 - 12 an inner surface and an outer surface; and
 - 13 a shroud extending axially from the inner surface into the head disk assembly
 - 14 chamber substantially enveloping the outer periphery of the disk, including at
 - 15 least part of the outer periphery coextensive with the actuator arm when the
 - 16 actuator arm is positioned adjacent to the outer periphery of the disk, to provide
 - 17 radial shrouding of the disk.
- 1 2. The disk drive as recited in claim 1, wherein the shroud is a separate piece adhered to the
- 2 inner surface of the cover.
- 1 3. The disk drive as recited in claim 1, wherein the cover is form molded and the form
- 2 molded cover comprises the shroud.